

Amendments to the Claims

Claim 1 (Currently amended): A method of automated handling of a ~~set~~ plurality of sets of previously harvested seed in batches through one or more operations upon the seed between an input and an output, comprising:

- (a) providing, prior to the input, a unique identifier to a for each set of seed, wherein said each set comprises a plurality of seed;
  - (b) conveying each set of seed, segregated from other sets of seed, from the input to the output without reference to a container or a physical location in a coordinate system;
  - ~~(b)~~(c) automatically performing said one or more operations on the each set of seed between the input and output while tracking of and maintaining segregation of each set of seed from other sets of seed, wherein the tracking comprises monitoring of one or more of the set consisting of (1) state of said conveying, (2) time, and (3) said one or more operations relative to each said set of seed;
  - ~~(e)~~(d) automatically accumulating at the output an end product plurality of seed from the each set of seed after performing said one or more operations and storing information about the end product plurality of seed correlated to the identifier;
- so that identity and progression of each set of seed between input and output is known and co-mingling of seed from different sets of seed is avoided, not by position of a conveying mechanism or container relative to a predetermined coordinate system, but by which of said one or more operations have been performed on each set.

Claim 2 (Original): The method of claim 1 further comprising segregating the set of seed from a second set of seed.

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Claim 3 (Original): The method of claim 1 further comprising a plurality of sets of previously harvested ~~seeds~~seed, each provided with a unique identifier, automatically performing said one or more operations while tracking and segregating each set of seed from each other.

Claim 4 (Original): The method of claim 1 further comprising monitoring said operations for conditions indicative of an error.

Claim 5 (Currently amended): The method of claim ~~[[3]]~~4 wherein the conditions indicative of an error comprise one or more of (a) over capacity, (b) possibility of commingling of sets of seed, (c) improper operation; (d) lack of validation against a data set; (e) improper set of ~~seeds~~seed relative to operational set-up.

Claim 6 (Original): The method of claim 3 further comprising regulating movement of a set of seed to deter reaching over-capacity for any operation.

Claim 7 (Currently amended): The method of claim 1 wherein progression of a said set of ~~seeds~~seed through said one or more operations is controlled while maintaining segregation of the set of ~~seeds~~seed.

Claim 8 (Currently amended): The method of claim 6 wherein control of progression comprises maintaining spatial separation of each set of ~~seeds~~seed operating on the ~~seeds~~seed and allowing recovery of each set of ~~seeds~~seed while preserving its identity from other sets of ~~seeds~~seed.

Claim 9 (Currently amended): The method of claim ~~[[2]]~~3 further comprising conveying said set of seed to ~~an outlet~~the output wherein said tracking provides information used to verify which set of seed is at the ~~outlet~~output.

Claim 10 (Currently amended): The method of claim ~~[[2]]~~3 further comprising conveying said set of seed to and through said one or more operations, said tracking providing information to verify the location of the set of seed between input and output.

Claim 11 (Currently amended): The method of claim 9 wherein the tracking ~~comprising~~  
comprises tracking the state of the operations relative the set of ~~seeds~~seed.

Claim 12 (Currently amended): The method of claim ~~[[10]]~~11 wherein the state of the operations includes monitoring status of devices that control conveyance of the set of ~~seeds~~seed.

Claim 13 (Original): The method of claim 1 wherein the sets of seed are seed samples.

Claim 14 (Original): The method of claim 12 wherein the seed samples are related to a plant breeding program.

Claim 15 (Currently amended): The method of claim ~~[[13]]~~14 wherein the plant breeding program is a corn breeding program.

Claim 16 (Currently amended): The method of claim ~~[[13]]~~14 wherein the plant breeding program is a soybean breeding program.

Claim 17 (Currently amended): The method of claim 1 wherein the operations comprise one or more of (a) separating a set of seed from a carrier or adhering vegetation, tissues or

structure, (b) cleaning, (c) discriminating between ~~seeds~~seed in the set of ~~seeds~~seed, (d) counting, (e) measuring moisture content, (f) measuring weight, (g) evaluating non-destructively, (h) measuring temperature.

Claim 18 (Original): The method of claim 1 further comprising directing said end product into a container.

Claim 19 (Previously presented): The method of claim 5 wherein said data set comprises a data base, a spreadsheet, or a mapped memory.

Claim 20 (Previously presented): The method of claim 5 further comprising generating a label for the set of seed or subset thereof based at least in part on information from the data set.

Claim 21 (Original): The method of claim 1 wherein the operations are self-cleaning.

Claim 22 (Currently amended): The method of claim 20 wherein the operations ~~include~~ comprise a cleaning/size sorting operation ~~which wherein the cleaning~~ is self-cleaning.

Claim 23 (Original): The method of claim 1 further comprising generating a notification for transmission to a remote location related to accumulated data regarding the set of seed and communicating the notification.

Claim 24 (Currently amended): The method of claim 1 further comprising separating undesired non-seed material and ~~some seeds~~ a portion of seed from the set of ~~seeds~~seed during said one or more operations.

Claim 25 (Currently amended): The method of claim 24 wherein said separated non-seed material and said ~~some seeds~~ a portion of seed are either discarded or accumulated for possible future use.

Claim 26 (Original): The method of claim 1 wherein the operations are programmable dependent upon selected parameters.

Claim 27 (Currently amended): The method of claim 25 wherein the parameters are related to differences between different types of ~~seeds~~ seed or differences between conditions of the same type of ~~seeds~~ seed.

Claim 28 (Withdrawn): An apparatus for automatically handling of a set of previously harvested seeds comprising a plurality of seeds of like characteristics comprising:

- (a) a seed input;
- (b) a seed output;
- (c) a handling system operatively associated with the input and output;
- (d) a controller which (d1) accepts or assigns an ID to a set of seeds, (d2) controls the processing of the set of seeds to the outlet and, (d3) controls accumulation of seed from the set of seed into an end product and accumulation of information about seed from the set of seed and correlates the same with the ID.

Claim 29 (Withdrawn): The apparatus of claim 28 wherein the machine-readable ID is a bar code.

Claim 30 (Withdrawn): The apparatus of claim 28 wherein the machine-readable ID is a RF ID tag.

Claim 31 (Withdrawn): The apparatus of claim 28 wherein the processing system includes a programmable processor, a seed processing device, and a conveyance component.

Claim 32 (Withdrawn): The apparatus of claim 31 wherein the programmable processor comprises a programmable data acquisition device for process control.

Claim 33 (Withdrawn): The apparatus of claim 32 wherein the programmable processor is a computer.

Claim 34 (Withdrawn): The apparatus of claim 32 wherein the programmable processor is a programmable logic controller (PLC).

Claim 35 (Withdrawn): The apparatus of claim 28 further comprising actuators, controlled by the processing system, adapted to control timing and conveyance of the sets of seed.

Claim 36 (Previously presented): The apparatus of claim 35 further comprising a sensor adapted to sense the state of an actuator.

Claim 37 (Withdrawn): The apparatus of claim 36 wherein the processing system is programmed to control the operation of the actuators to keep spatial separation between certain sets of seeds while being simultaneously processed by the apparatus.

Claim 38 (Withdrawn): The apparatus of claim 36 wherein the programming maintains spatial separation by a timing regime implemented by said processor for controlling the actuators.

Claim 39 (Withdrawn): The apparatus of claim 37 further comprising using a set of sensors to report a state of a set of actuators relative to time to allow said processing system to track each set of seeds through the processing.

Claim 40 (Withdrawn): The apparatus of claim 38 further comprising programmed safeguards to control, stop or delay processing upon sensing of a certain condition.

Claim 41 (Withdrawn): The apparatus of claim 39 wherein said certain condition relates to amount of seed, state of actuators, or feed rate of seeds.

Claim 42 (Withdrawn): The apparatus of claim 27 wherein said operations comprise one or more of (a) separating seeds from a carrier or adhering vegetation, tissues or structure, (b) separating seed from non-seed or damaged seed, (c) sorting seeds based on a characteristic of the seed.

Claim 43 (Withdrawn): The apparatus of claim 27 further comprising a database associated with the processing system.

Claim 44 (Withdrawn): The apparatus of claim 42 further comprising a communication link between said database and a second database.

Claims 45-118 (Cancel)